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LARGE AREA CROP INVENTORY EXPERIMENT (LACIE)

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LACIE QUICK LOOK

ACCURACY ASSESSMENT REPORT

(REVIEW OF THE DECEMBER 17, 1976 CAR)

DEC 1978 RECEIVED NASA STI FACILITY

National Aeronautics and Space Administration

LYNDON B. JOHNSON SPACE CENTER

Houston, Texas

DECEMBER 30, 1976

NP06-0115

LACIE SENSITIVE	PROTECTION PERIODS	
	MAXIMUM	RESTRICTED
ENDING DATE	DEC 15 1976	APR 5 1977
AUTHORIZED BY	B Anderson JAN 3 1977 Signature Date	

LARGE AREA CROP INVENTORY EXPERIMENT

QUICK LOOK

ACCURACY ASSESSMENT REPORT

REVIEW OF THE DECEMBER 17, 1976 CAR

DECEMBER 30, 1976

N77-19272

LARGE AREA CROP INVENTORY EXPERIMENT

QUICK LOOK

ACCURACY ASSESSMENT REPORT

REVIEW OF THE DECEMBER 17, 1976 CAR

LACIE SENSITIVE	PROTECTION PERIODS	
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
LYNDON B. JOHNSON SPACE CENTER
HOUSTON, TEXAS

December 1976

SUMMARY

Accuracy of the LACIE estimates of acreage, yield and production for the U.S. Great Plains states, as measured by the relative difference $\left(\text{i.e., } [\text{LACIE} - \text{USDA/SRS}] \div \text{LACIE} \times 100\ \%\right)$, did not change significantly from that reported in the October Quick Look Report.

Of the winter wheat estimates, that for Oklahoma acreage contined to be the greatest single source of error. The probable cause of this error lies in the effect of drought on the state's wheat crop. The resulting unusual wheat signatures on the color IR imagery causes misinterpretation by the analysts and errors of mission for wheat.

The LACIE winter and spring wheat yield estimates experienced only very small changes since the previous Quick Look Report. All LACIE estimates were within 0.1 bushel per acre of the October figures. In comparison with USDA/SRS yields, LACIE estimates of yield agreed well except for a 36.6% relative difference in South Dakota for spring wheat.

The LACIE production estimates, when compared overall with the USDA/SRS figures, recorded a slight improvement. The total wheat production relative difference dropped from -13.1% in the previous report to -12.3% in the wheat production accuracy. The winter wheat production estimates, on the other hand, recorded an increased relative difference going from -6.6% to -7.2%.

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AUTHORIZED BY	B Anderson Signature	JAN 3 1977 Date

1.0 AREA ESTIMATION

The LACIE total wheat acreage estimate (including both spring and winter wheat) for the U.S. Great Plains is approximately 14% below the USDA/SRS estimates for December. Figure 1 depicts the relative difference by state between LACIE and USDA/SRS acreage figures for August, September, October, and December. Also, plotted are the Phase I Review results.

When comparing current results with Phase I Review results at the U.S. Great Plains level there is virtually no difference. However, differences do occur at the state level. For example, this year's Oklahoma acreage estimates are much lower than the corresponding USDA/SRS estimates.

The LACIE total wheat acreage estimate increased by approximately 300,000 acres (less than 1%) from October to December. Discussion of specific crops and states follows.

1.1 SPRING WHEAT AREA

The LACIE estimate of total spring wheat acreage for the states of Minnesota, Montana, North Dakota and South Dakota increased by 230,000 acres since October, largely due to an adjustment in the North Dakota figures. The overall relative difference between LACIE and USDA/SRS

LACIE SENSITIVE	PROTECTION PERIODS	
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ENDING DATE	DEC 15 1976	APR 15 1977
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total spring wheat acreage estimates, at -26.3%, was slightly improved from the October figure of -28.0%. Large relative differences in Minnesota and Montana continue to be the major contributing factors. The relative difference in Minnesota increased during the period with the remaining state estimates recording slight improvements.

1.2 WINTER WHEAT AREA

In December, the LACIE winter wheat area estimate for the seven states was less than the USDA/SRS estimate by a relative difference of -7.3%, a slight increase over the October relative difference of -7.1%. The LACIE total area estimate for the five states in the U.S. Southern Great Plains was 6.3% below the USDA/SRS figure. The winter wheat total area estimate for the mixed states of Montana and South Dakota was 14.7% below the USDA/SRS figure.

The winter wheat area estimate of December for the seven states increased only a very slight 0.3% over the October figure. As for the individual states, all except Nebraska and Texas experienced small changes with increases in Kansas and South Dakota and decreases in Colorado, Oklahoma and Montana. The greatest change occurred in the Montana figure which recorded a 49,000 acre decrease in total estimated acreage.

The error recorded in Oklahoma continued to be the greatest contributor to the total acreage error with a -47.9% relative difference when compared with USDA/SRS. Also recording a large relative difference

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	MAXIMUM	RESTRICTED
ENDING DATE	DEC 13 1978	APR 13 1977
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(-48.1%) was the state of Montana. The 6.2% increase in this figure resulted from a decrease in the LACIE estimate coupled with an increase in the USDA/SRS estimate.

Table 1 presents the LACIE and USDA/SRS area estimates for various regions and states in the U.S. Great Plains.

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2.0 YIELD

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Table 2 presents the LACIE yield estimates for both winter wheat and spring wheat as well as the corresponding USDA/SRS figures.

The total yield estimates for all wheat in the U.S. Great Plains states remained unchanged for both LACIE and USDA/SRS at 26.7 and 26.4 bushels per acre, respectively, despite many minor changes among the individual state estimates. The LACIE yield estimates remained very close to those of October with variations only up to ± 0.1 bushel per acre in Kansas and Oklahoma winter wheat and North Dakota spring wheat yields. Fluctuations in relative differences were recorded in all but two instances (Texas and Montana winter wheat) and were largely due to USDA/SRS estimate modifications.

LACIE SENSITIVE	PROTECTION PERIODS MAXIMUM RESTRICTED	
ENDING DATE	DEC 15 1976	APR 5 1977
AUTHORIZED BY	Bardeen Signature	JAN 3 1977 Date

3.0 PRODUCTION

Table 3 lists the production estimates for the LACIE and USDA/SRS by state for both winter and spring wheat.

The LACIE production estimate for winter wheat in the seven Great Plains states was 7.2% below the USDA/SRS figure. The relative difference for spring wheat was -22.3%.

Significant changes occuring in the LACIE production figures were due almost entirely to LACIE acreage fluctuations since the corresponding yield estimates were very similar to those of October.

The large relative differences recorded for the production estimate corresponded with those of the acreage estimates except in South Dakota spring wheat, where the yield error was the major factor, and in South Dakota winter wheat, where both acreage and yield relative errors were large and positive.

No statistical comparisions have been made in this report, since the CAR contained estimates only, with no standard errors or coefficients of variation.

LACIE SENSITIVE	PROTECTION PERIODS MAXIMUM RESTRICTED	
ENDING DATE	DEC 15 1976	APR 5 1977
AUTHORIZED BY	Signature	JAN 3 1977 Date

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TABLE 1

CROP/STATE	LACIE AREA ESTIMATE	USDA/SRS AREA ESTIMATE	RELATIVE DIFFERENCE $\left(\frac{\text{LACIE - SRS}}{\text{LACIE}} \times 100\right)\%$
	1000 ACRES	1000 ACRES	
Winter Wheat			
Colorado	2,704	2,200	18.6
Kansas	11,125	11,300	- 1.6
Nebraska	3,399	2,950	13.2
Oklahoma	4,261	6,300	-47.9
Texas	4,344	4,700	- 8.2
SUBTOTAL	25,833	27,450	- 6.3
Montana	2,079	3,080	-48.1
South Dakota	1,452	970	33.2
SUBTOTAL	3,531	4,050	-14.7
TOTAL WINTER WHEAT	29,364	31,500	- 7.3
Spring Wheat			
Minnesota	2,198	3,893	-77.1
Montana	1,516	2,335	-54.0
North Dakota	9,856	11,520	-16.9
South Dakota	2,079	2,020	2.8
TOTAL SPRING WHEAT	15,649	19,768	-26.3
TOTAL WHEAT	45,013	51,268	-13.9

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LACIE SENSITIVE | PROPRIETARY DATA
MAXIMUM | RESTRICTED
DEC 15 1976 | APR 15 1977

TABLE 2

CROP/STATE	LACIE AREA ESTIMATE	USDA/SRS AREA ESTIMATE	RELATIVE DIFFERENCE $\left(\frac{\text{LACIE - SRS}}{\text{LACIE}} \times 100\right)\%$
	Bu/Ac	Bu/Ac	
Winter Wheat			
Colorado	19.6	21.5	- 9.7
Kansas	31.0	30.0	3.2
Nebraska	32.7	32.0	2.1
Oklahoma	22.6	24.0	- 6.2
Texas	18.7	22.0	-17.6
SUBTOTAL	26.6	26.8	- 0.8
Montana	29.9	32.0	- 7.0
South Dakota	31.6	18.0	43.0
SUBTOTAL	30.6	28.6	6.5
TOTAL WINTER WHEAT	27.0	27.0	0
Spring Wheat			
Minnesota	30.3	32.4	- 6.9
Montana	27.1	29.4	- 8.5
North Dakota	27.0	24.7	8.5
South Dakota	17.2	10.9	36.6
TOTAL SPRING WHEAT	26.2	25.3	3.4
TOTAL WHEAT	26.7	26.4	1.1

LACIE SENSITIVE	PROTECTION PERIODS	
	MAXIMUM	RESTRICTED
ENDING DATE	DEC 15 1976	APR 5 1977
AUTHORIZED BY	Bagdanov	JAN 3 1977

TABLE 3

CROP/STATE	LACIE PRODUCTION ESTIMATE	USDA/SRS PRODUCTION ESTIMATE	RELATIVE DIFFERENCE $\left(\frac{\text{LACIE - USDA/SRS}}{\text{LACIE}} \times 100\right)\%$
	1000 Bu	1000 Bu	
Winter Wheat			
Colorado	52,924	47,300	10.6
Kansas	344,472	339,000	1.6
Nebraska	110,972	94,400	14.9
Oklahoma	96,491	151,200	-56.7
Texas	81,312	103,400	-27.2
SUBTOTAL	686,171	735,300	- 7.2
Montana	62,167	98,560	-58.5
South Dakota	45,904	17,460	62.0
SUBTOTAL	108,071	116,020	- 7.4
TOTAL WINTER WHEAT	794,241	851,320	- 7.2
Spring Wheat			
Minnesota	66,589	126,244	-89.6
Montana	41,058	68,735	-67.4
North Dakota	266,529	284,050	- 6.6
South Dakota	35,675	22,060	38.2
TOTAL SPRING WHEAT	409,851	501,089	-22.3
TOTAL WHEAT	1,204,092	1,352,409	-12.3

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ENDING DATE: DEC 15 1978 | APR 5 1977
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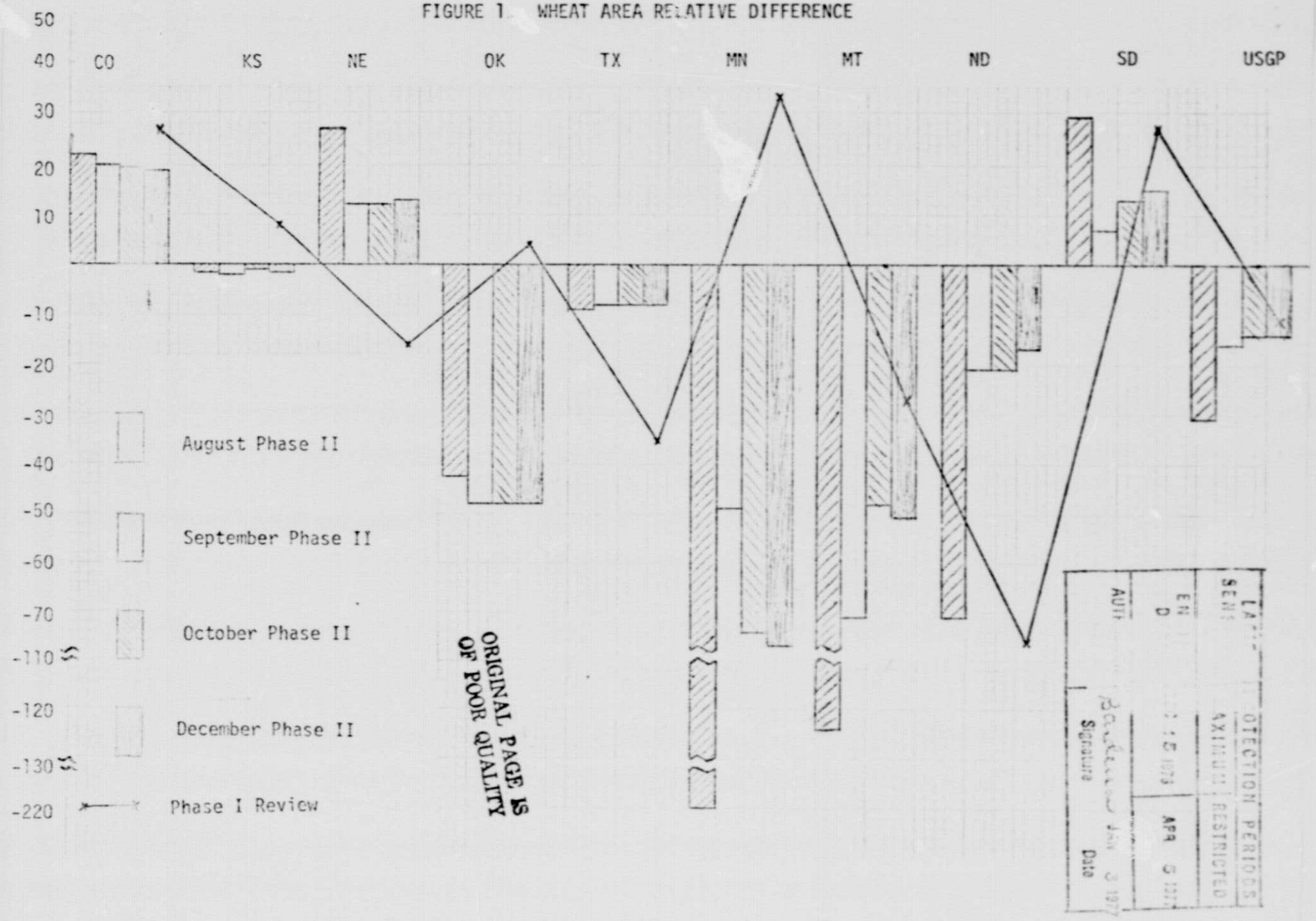
FIGURE 1 WHEAT AREA RELATIVE DIFFERENCE



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